

FIG. 1

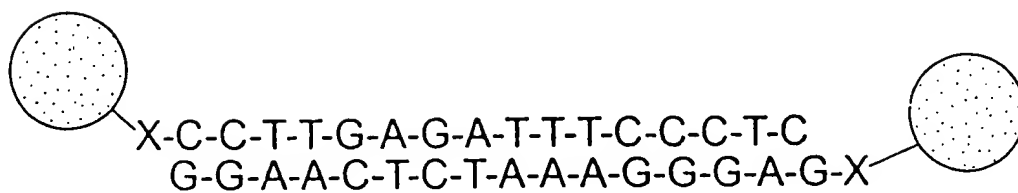
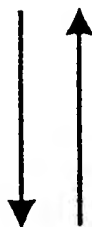
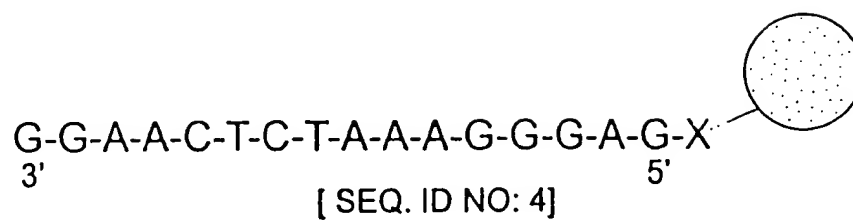
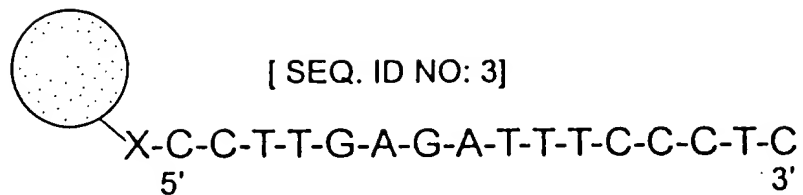


FIG. 2

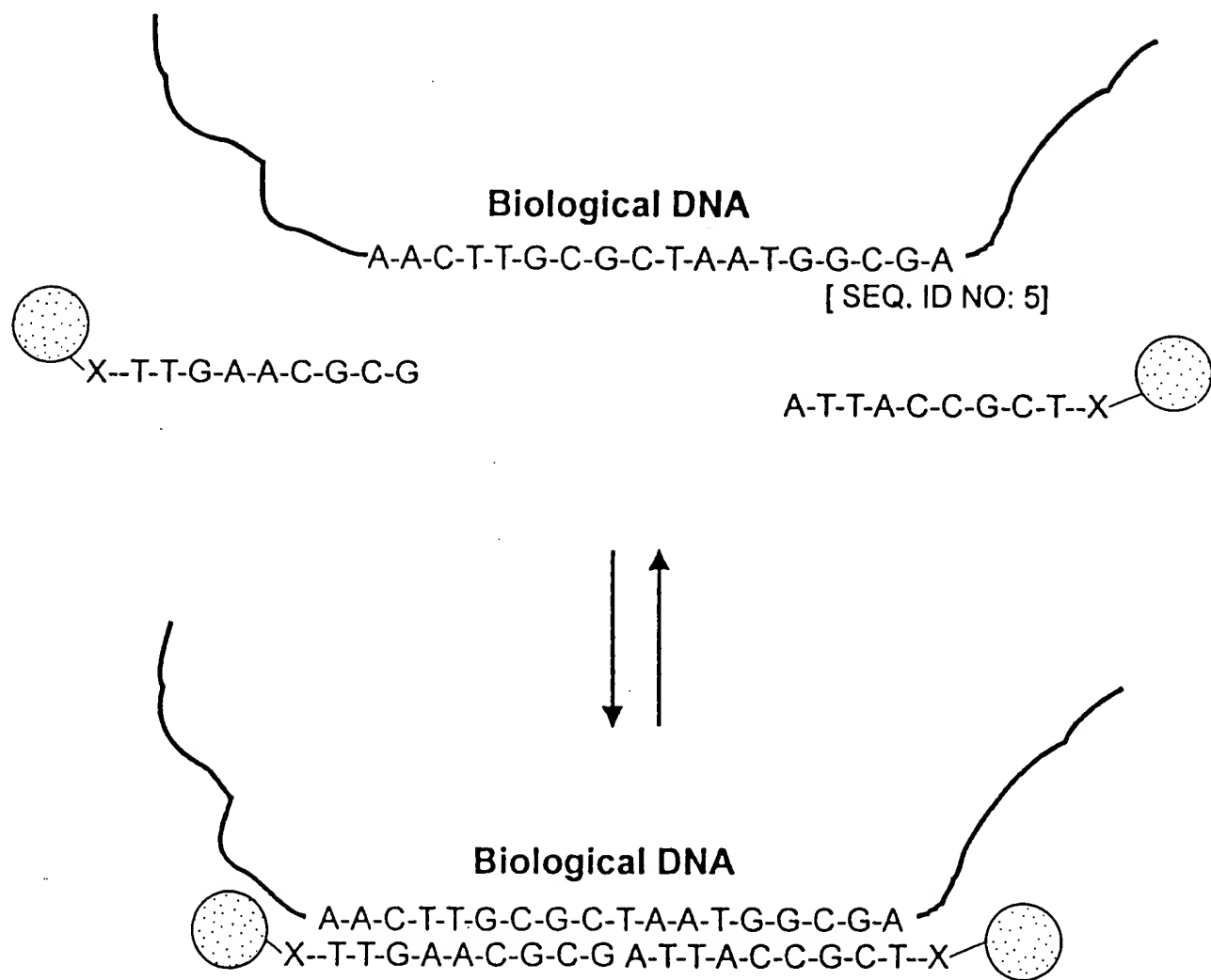


FIG.3

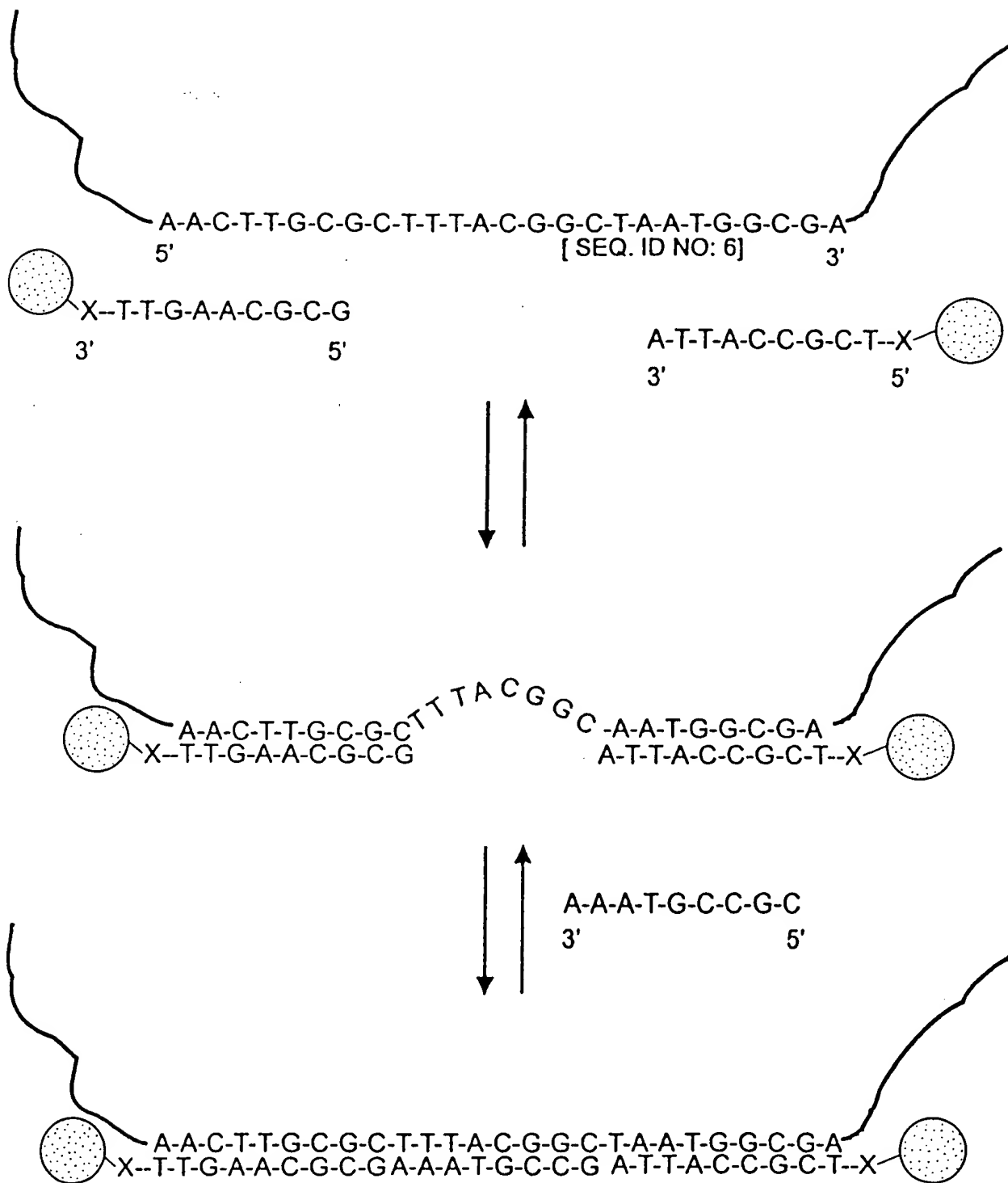


FIG. 4

5' A-T-G-G-C-A-A-C-T-A-T-A-C-G-C-G-C-T-A-G 3' Linking oligonucleotide
 [SEQ. ID NO: 2] A-T-A-T-G-C-C-G-C-G-A-T-C-T-C-A-G-C-A-A-A 5'
 [SEQ. ID NO: 1]

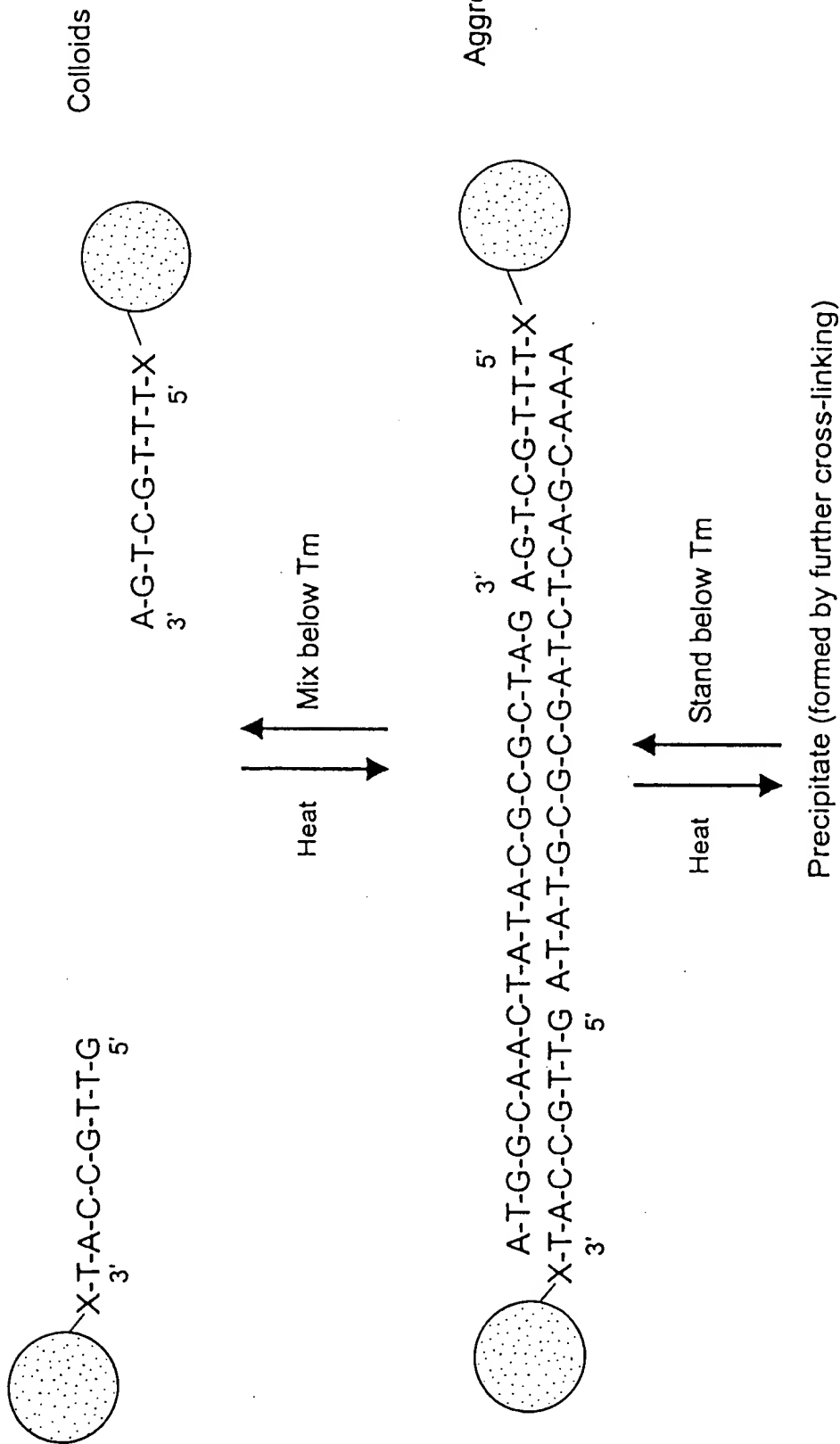
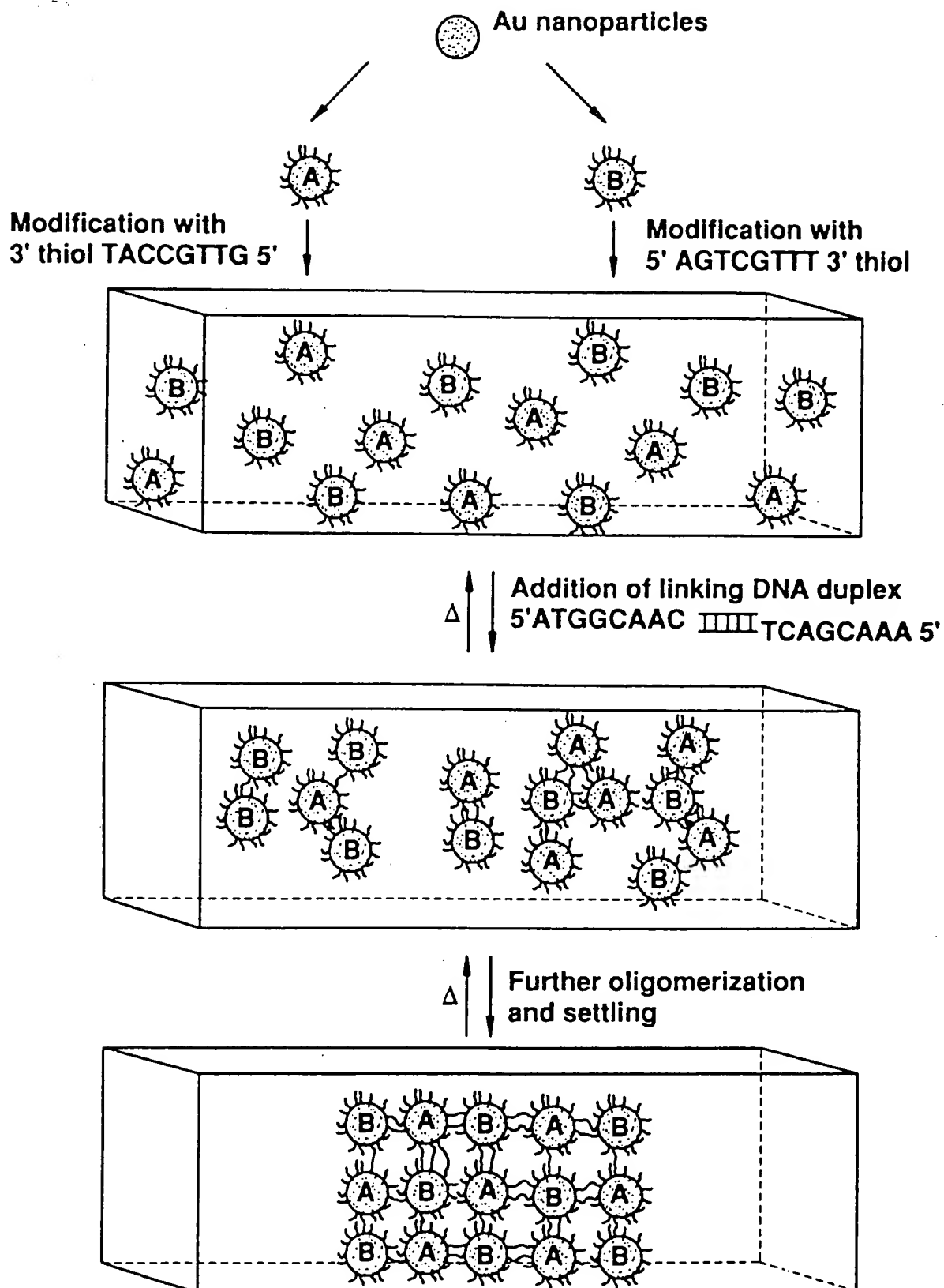


FIG.5



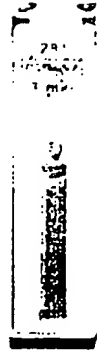
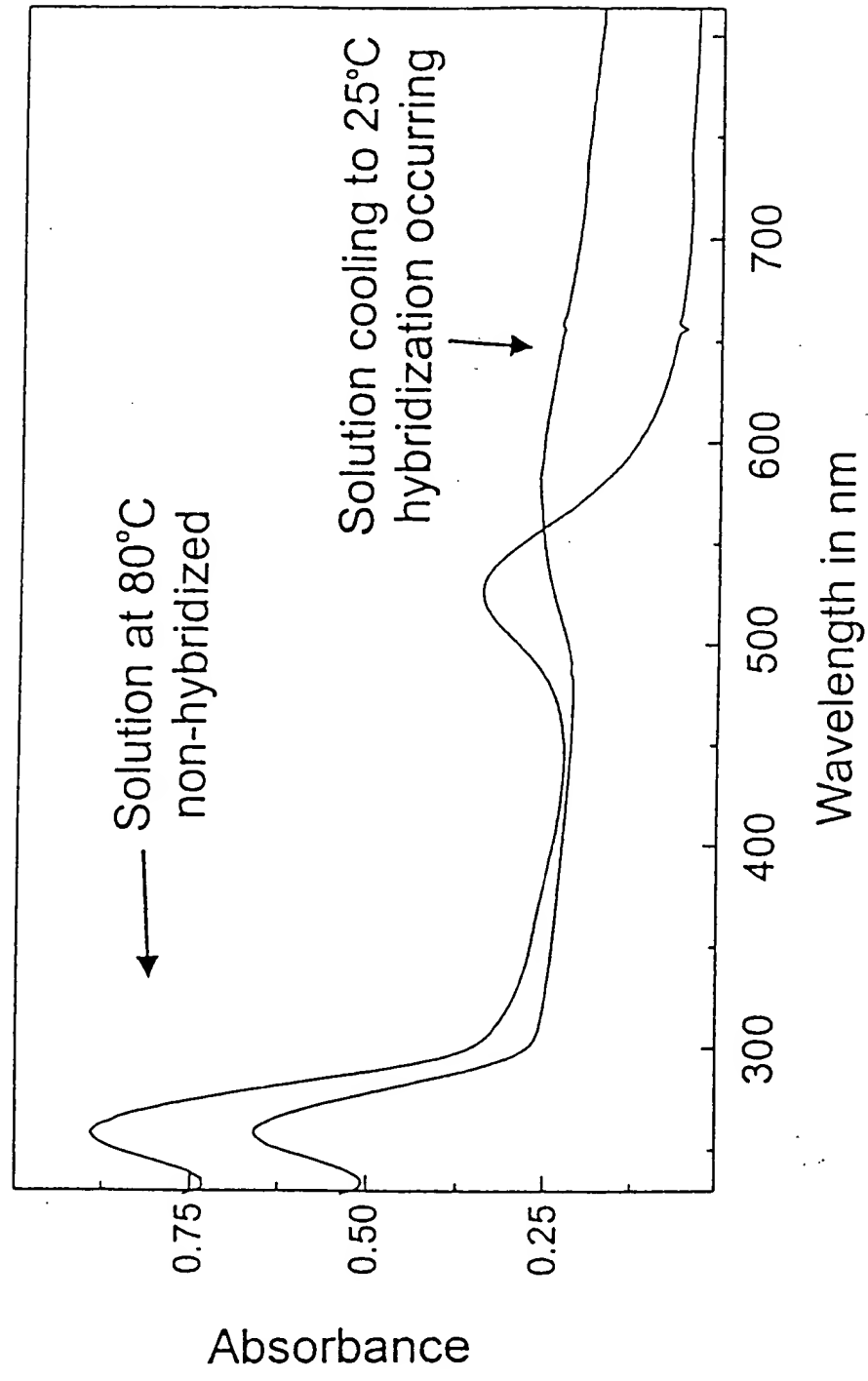


FIG. 6A FIG. 6B FIG. 6C

TO 2030 52522000

FIG. 7



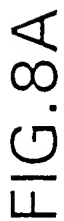
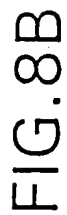




FIG. 9B

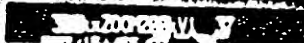


FIG.10

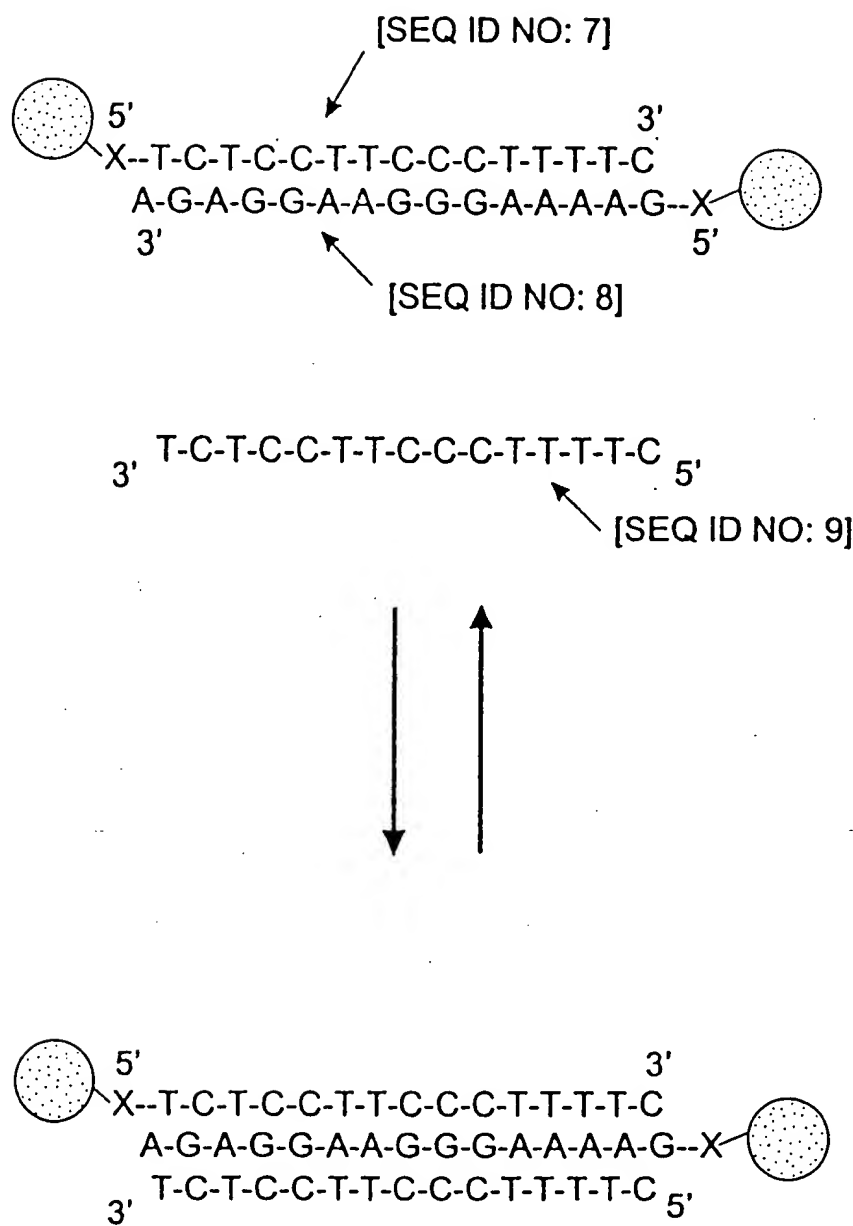


FIG. 11

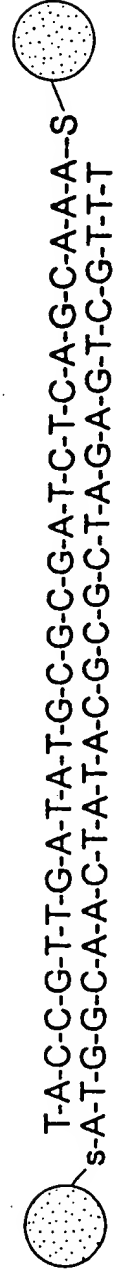
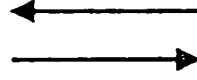
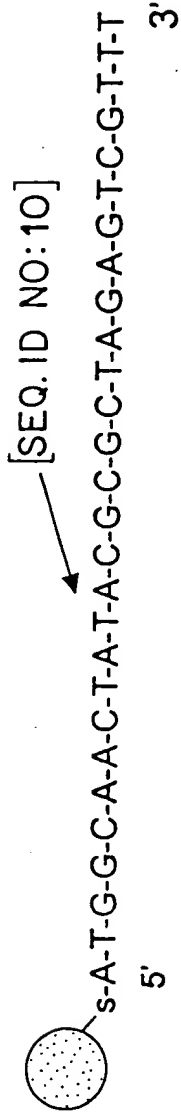


FIG. 12A

Complementary Target

[SEQ. ID NO: 12]

1

[SEQ. ID NO: 14]

2

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
 5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

3

[SEQ. ID NO: 13]

FIG. 12B

Probes without Target12

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G

FIG. 12C

Half Complementary Target12

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
 5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-T-G-G-C-A-A-C-T-A-T-A-C-G-C

4

[SEQ. ID NO: 15]

FIG. 12D

Target - 6 bp12

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
 5' G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

5

[SEQ. ID NO: 16]

FIG. 12E

One bp Mismatch12

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
 5' A-G-C-A-T-G-G-T-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

6

[SEQ. ID NO: 17]

FIG. 12F

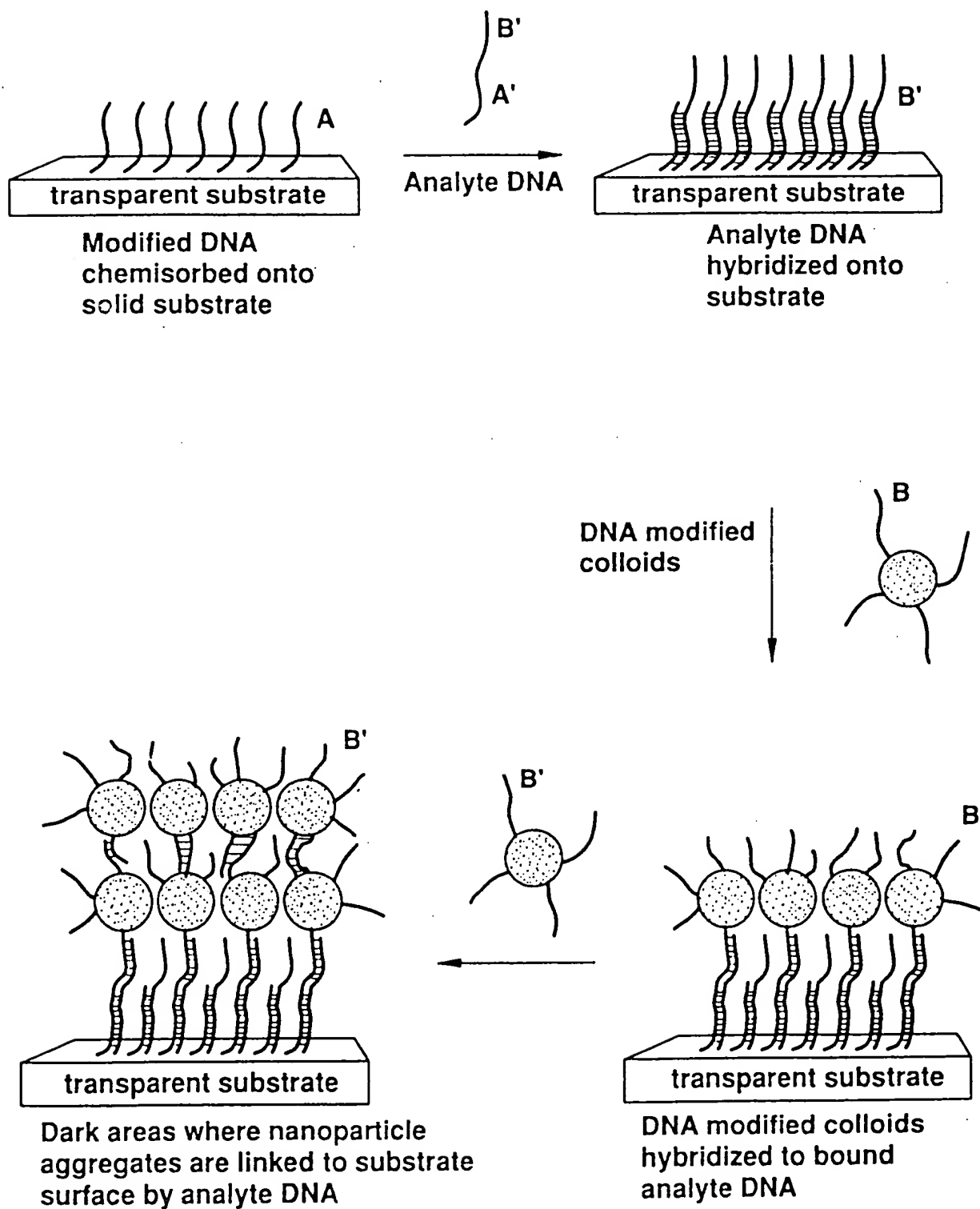
Two bp Mismatch12

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
 5' A-G-C-A-T-G-T-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

7

[SEQ. ID NO: 18]

FIG.13A



1 4 7 2 2

FIG.13B

transparent substrate

thiol terminated
modification of
surface

transparent substrate

gold
nanoparticles

transparent substrate

thiol modified
DNA adsorbed
onto particles

transparent substrate

B' analyte DNA
strand
A' strand

transparent substrate

DNA modified
nanoparticles

transparent substrate

analyte DNA hybridized to
DNA modified nanoparticles

nanoparticle
linker strand

transparent substrate

DNA modified
nanoparticles

transparent substrate

dark areas where
nanoparticle aggregates linked
to substrate by analyte DNA

000235-00701
T02080-525280

FIG. 14A

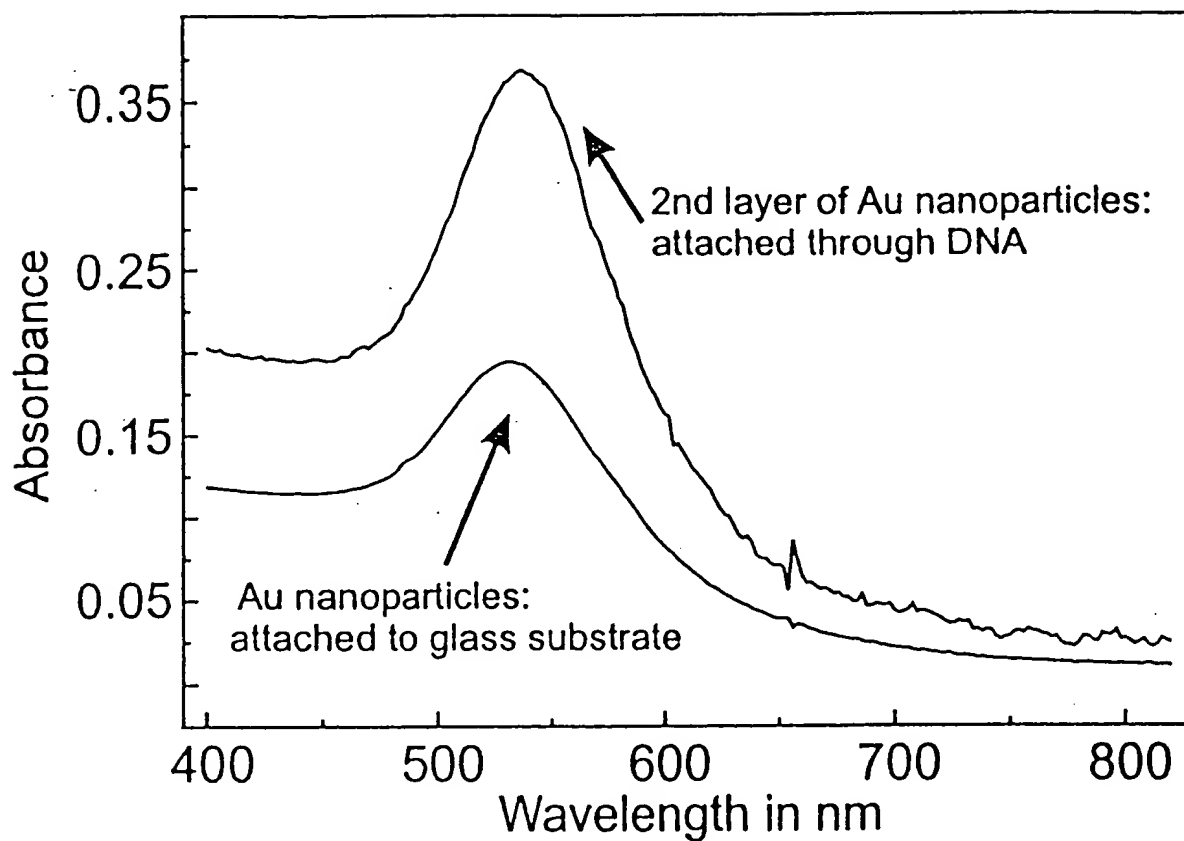
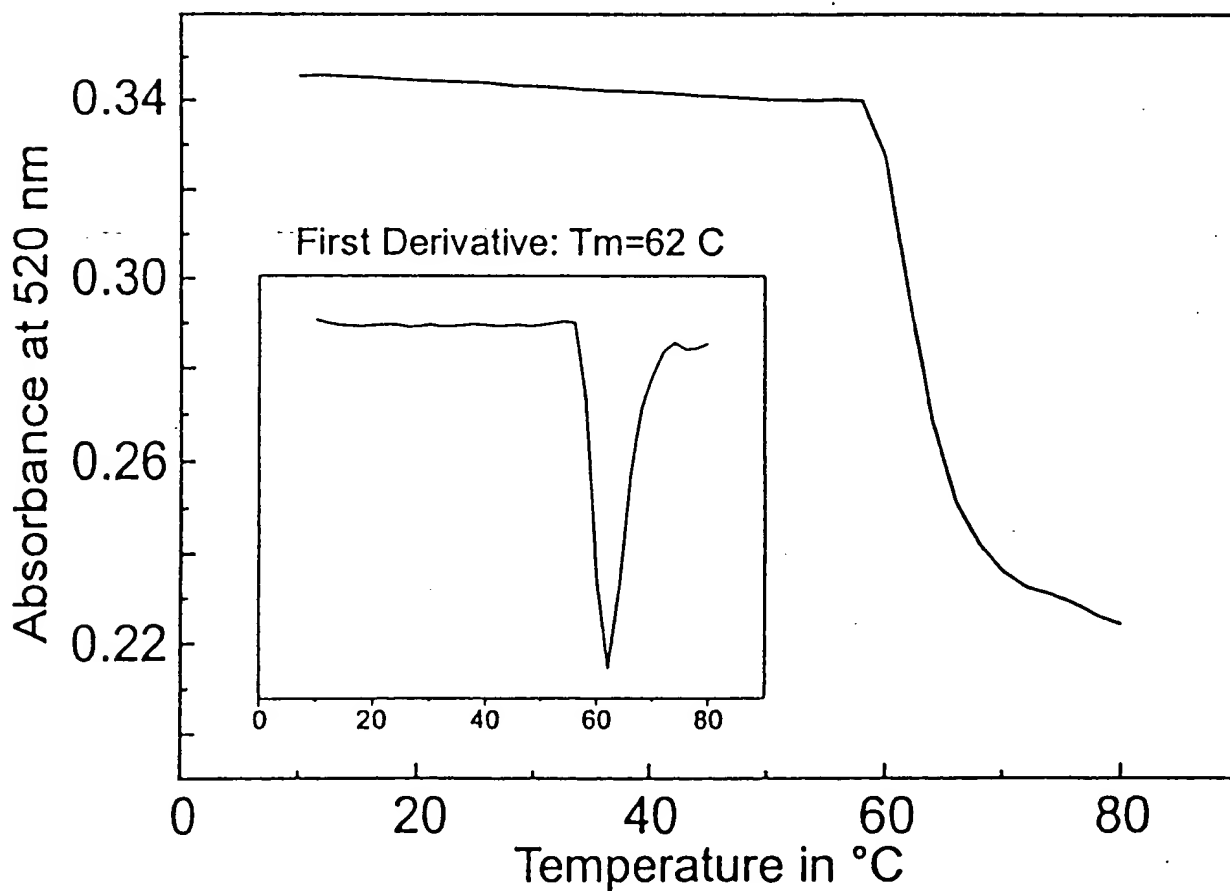


FIG. 14B



Probes with No Target

SEQ ID NO:20



Half-Complementary Target

SEQ ID NO:21



Complementary Target

T_m=53.5°C

SEQ ID NO:22



ONE Base-Pair Mismatch at Probe Head

T_m=50.4°C

SEQ ID NO:23



ONE Base-Pair Mismatch at Probe Tail

T_m=46.2°C

SEQ ID NO:24



ONE Base Deletion

T_m=51.6°C

SEQ ID NO:25



ONE Base-Pair Insertion

 $T_m = 50.2^\circ\text{C}$

SEQ ID NO:26

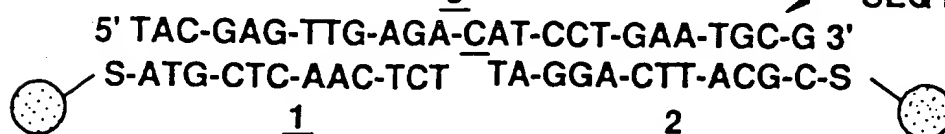


FIG. 16A

24 Base Template

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3'
 —S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S —
 1 2

FIG. 16B

48 Base Template with Complementary 24 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-ATC-CTG-AAT-GCG 3'
 —S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT TAG-GAC-TTA-CGC-S —
 1 2

1 7 / 2 2

FIG. 16C

72 Base Template with Complementary 48 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-TAT-AT T-GGA-CGC-TTT-ACG-GAC-AAC-ATC-CTG-AAT-GCG 3'
 —S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT-ATA-TAA-CCT-GCG-AAA-TGC-CTG-TTG TAG-GAC-TTA-CGC-S —
 1 2

FIG. 17A

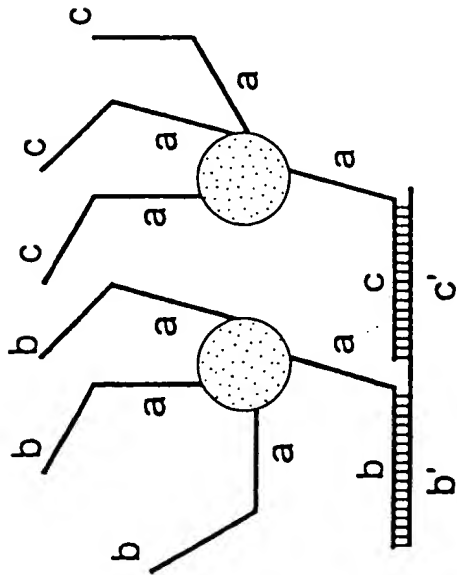


FIG. 17B

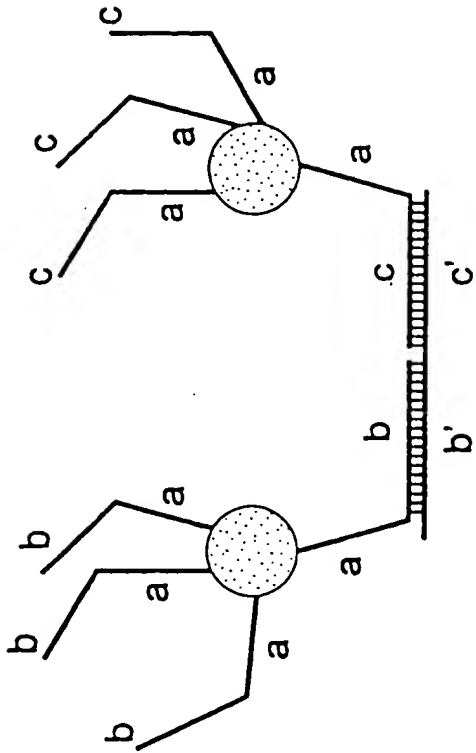


FIG. 17C

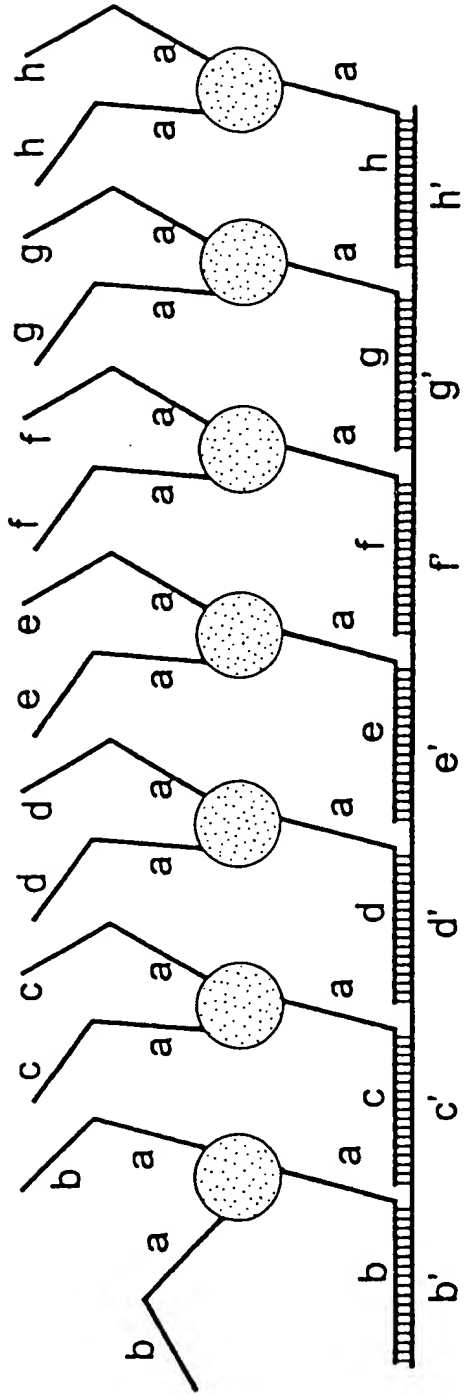


FIG.17D

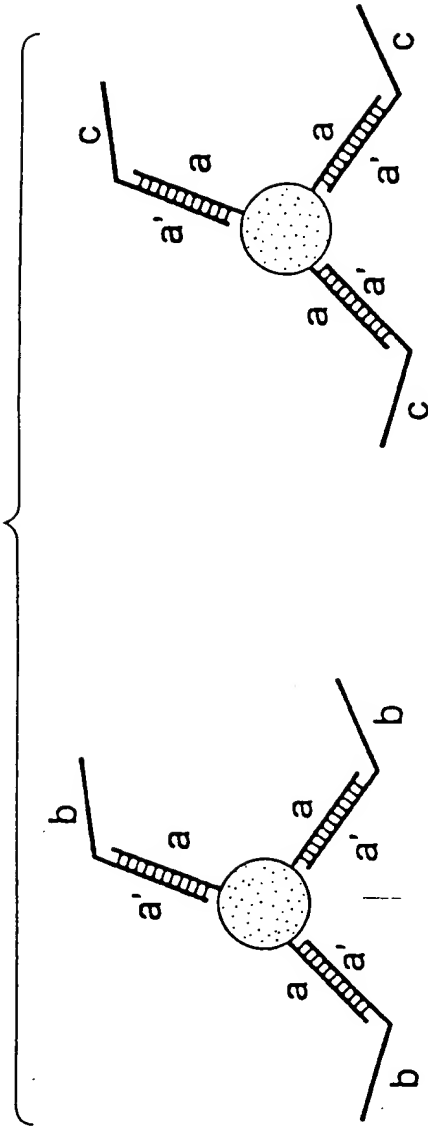


FIG.17E

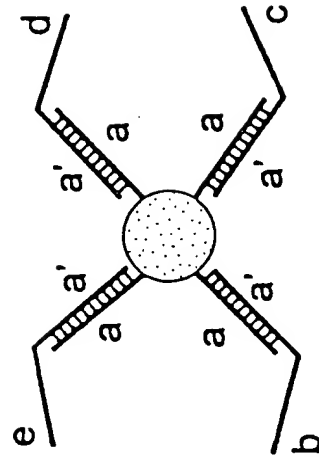


FIG.18

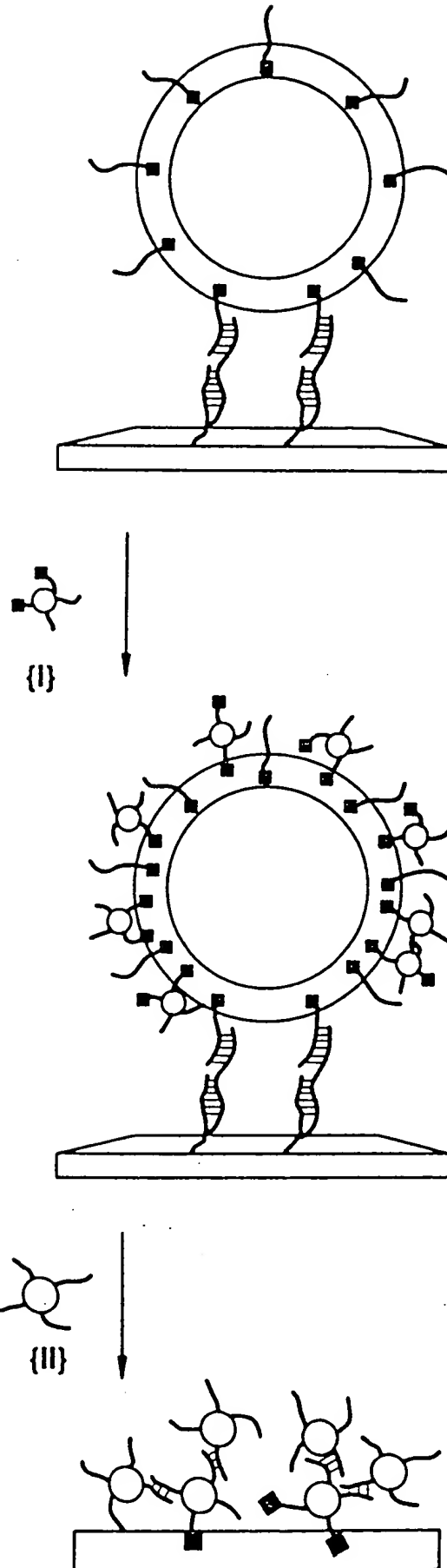


FIG.19A

21 / 22

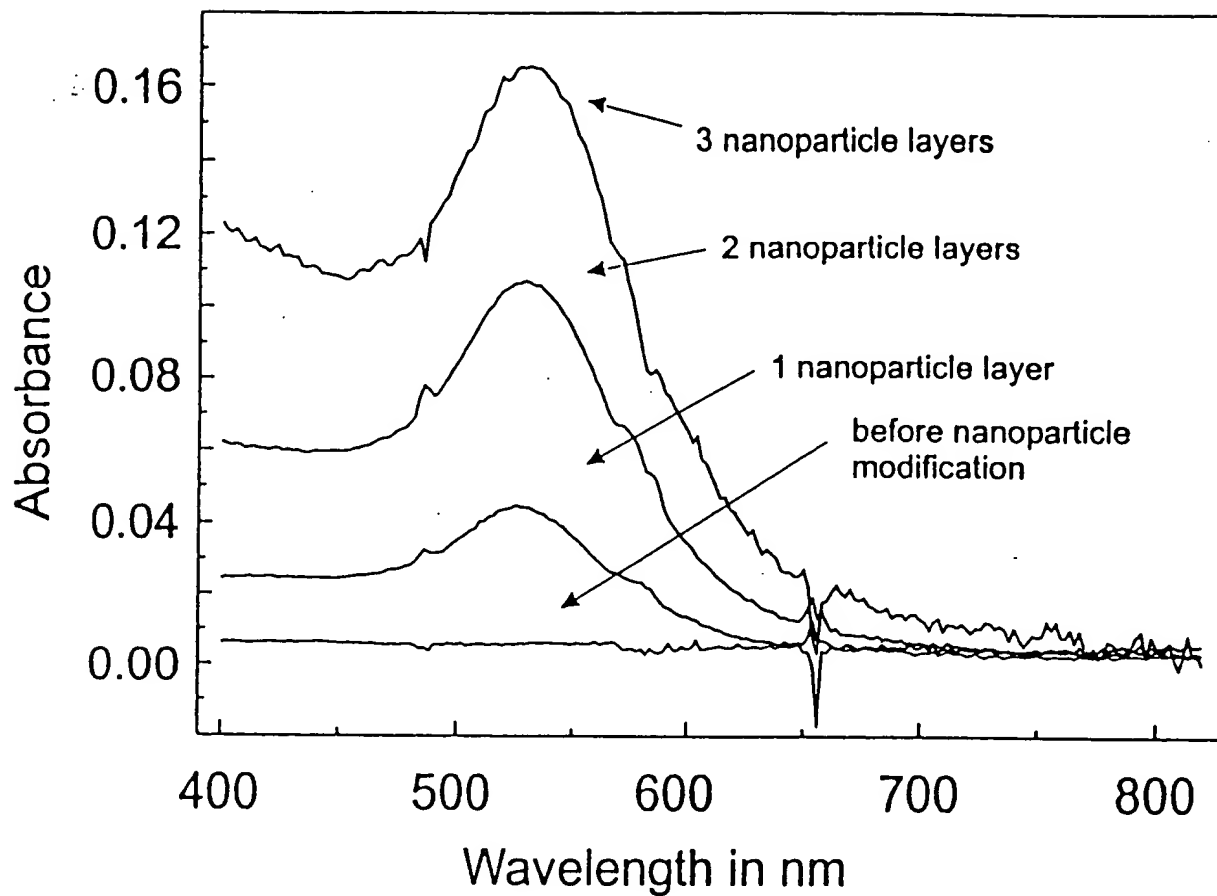


FIG.19B

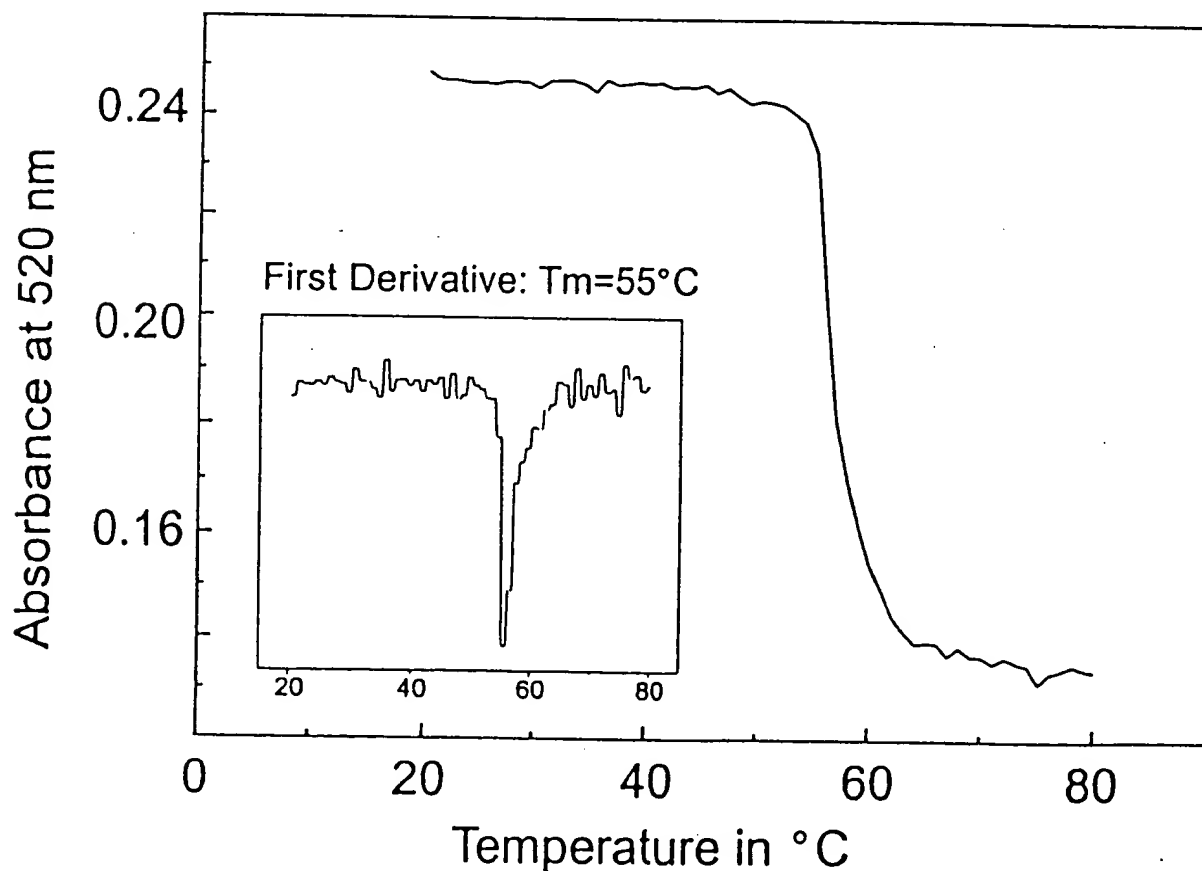


FIG.20A

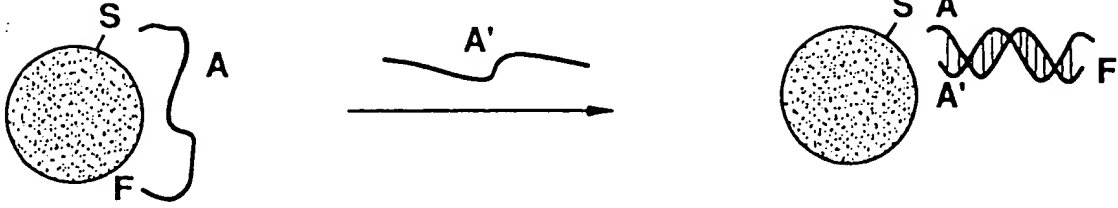
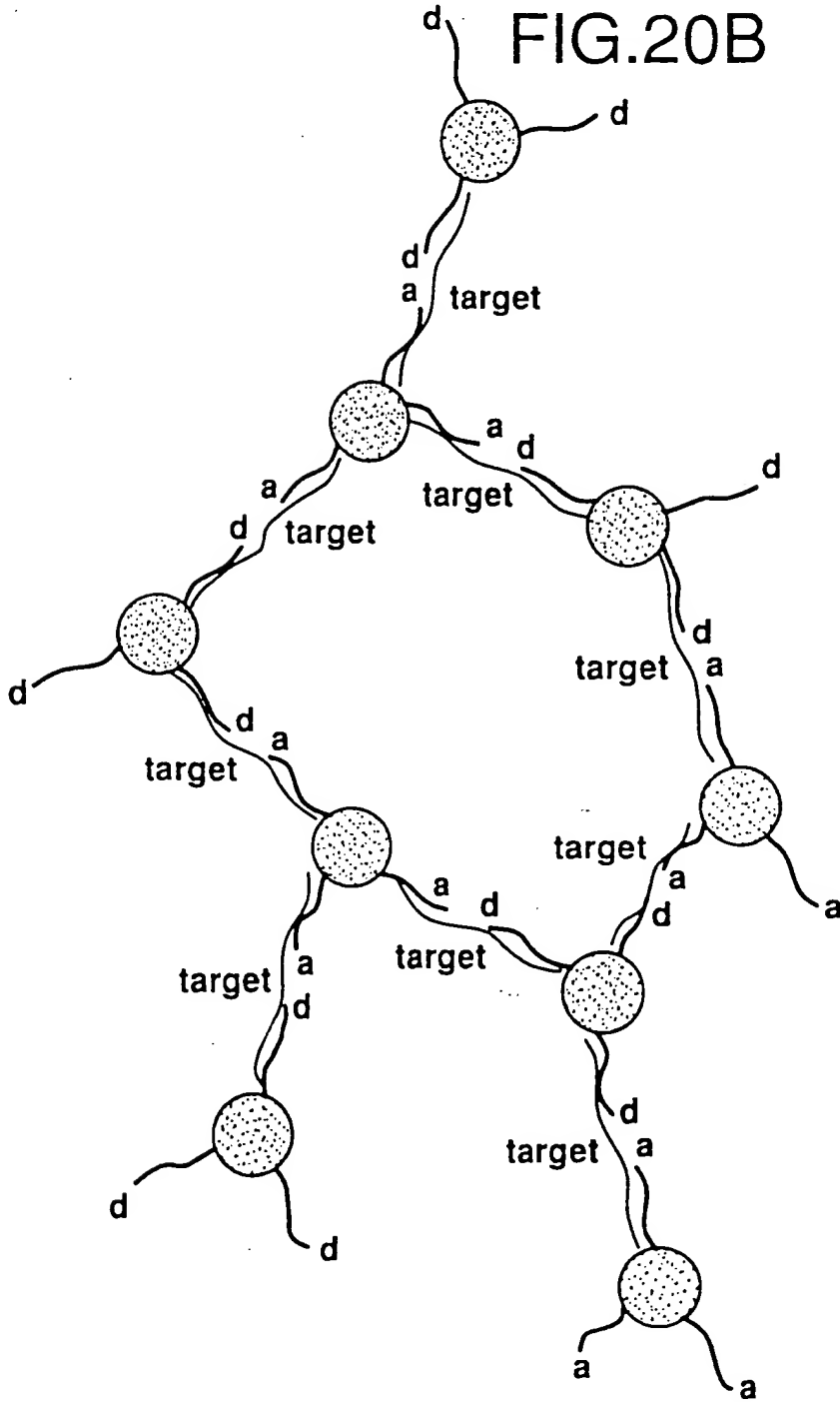


FIG.20B



00023635-080701

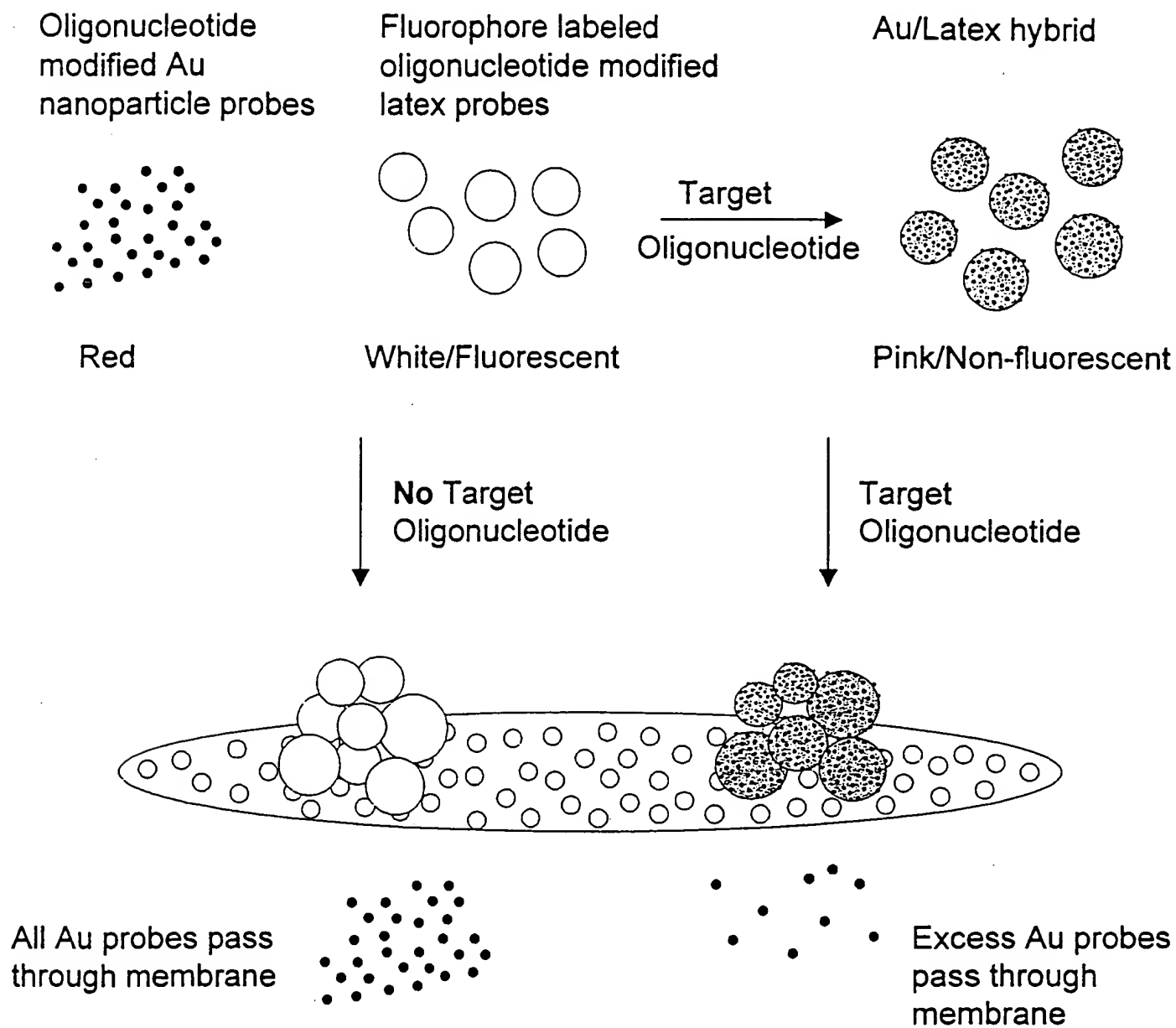
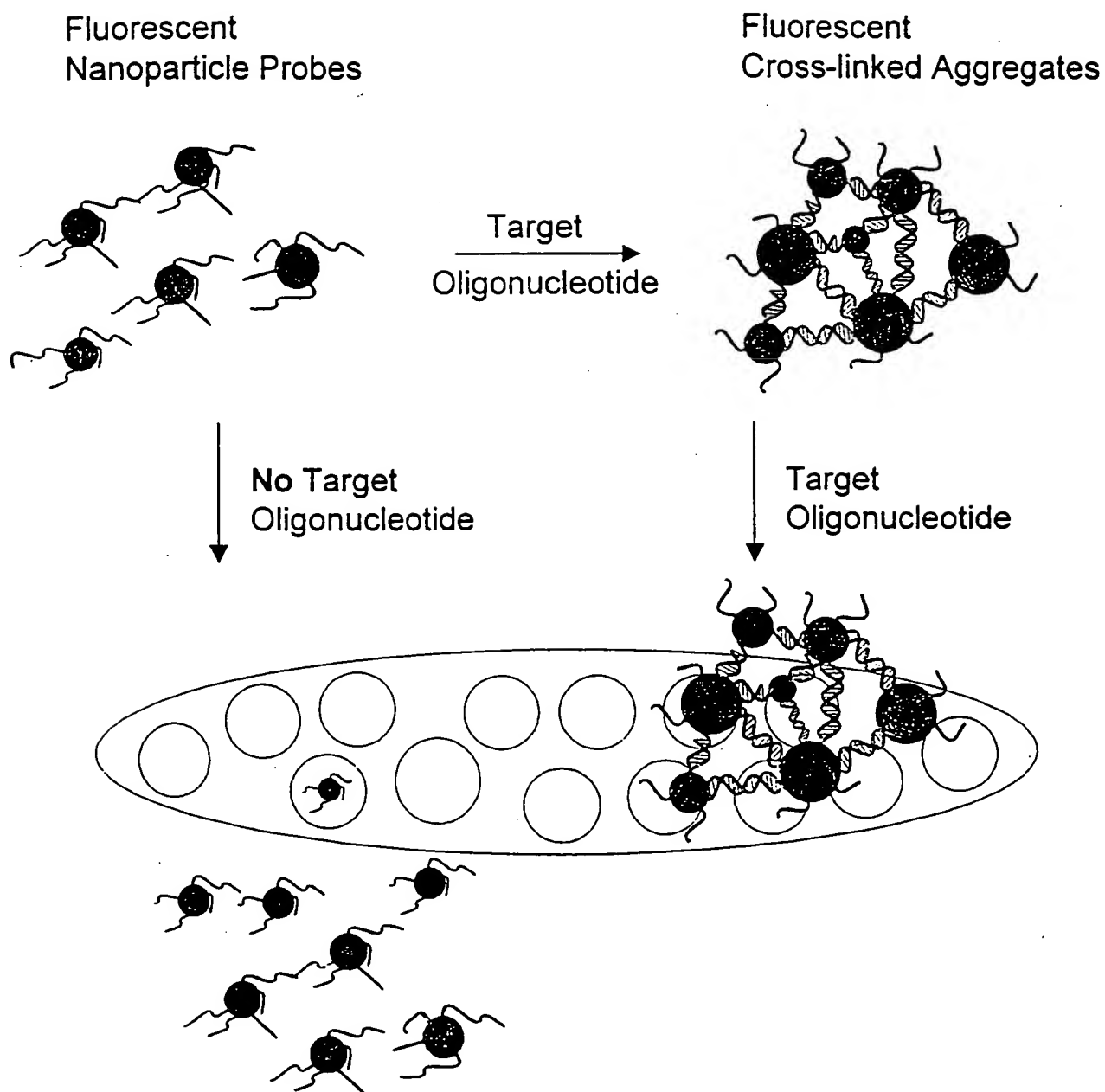


FIGURE 21

FIGURE 22



The fluorescent nanoparticle probes pass through the membrane

The fluorescent cross-linked aggregates are retained by the membrane

Anthrax PCR Product

5'G GCG GAT GAG TCA GTA GTT AAG GAG GCT CAT AGA GAA GTA ATT AAT
3'C CGC CTA CTC AGT CAT CAA TTC CTC CGA GTA TCT CTT CAT TAA TTA

TCG TCA ACA GAG GGA TTA TTG TTA AAT ATT GAT AAG GAT ATA AGA AAA
AGC AGT TGT CTC CCT AAT AAC AAT TTA TAA CTA TTC CTA TAT TCT TTT

ATA TTA TCC AGG GTT ATA TTG TAG AAA TTG AAG ATA CTG AAG GGC TT 3'
TAT AAT AGG TCC CAA TAT AAC ATC TTT AAC TTC TAT GAC TTC CCG AA 5'

141 mer Anthrax PCR product [SEQ ID NO: 36]

3' CTC CCT AAT AAC AAT

[SEQ ID NO: 37]

3' TTA TAA CTA TTC CTA

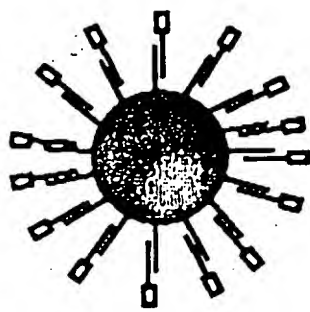
[SEQ ID NO: 38]

Oligonucleotide-Nanoparticle Probes

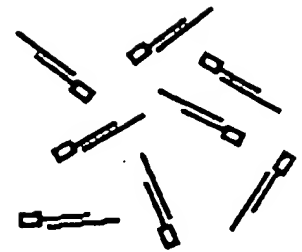
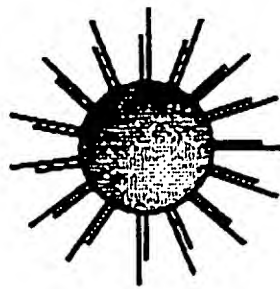
Blocker Oligonucleotides

3' C CGC CTA CTC AGT CAT CAA TTC CTC CGA GT	[SEQ ID NO: 39]
3' A TCT CTT CAT TAA TTA AGC AGT TGT	[SEQ ID NO: 40]
3' TAT TCT TTT TAT AAT AGG TCC CAA TAT	[SEQ ID NO: 41]
3' AAC ATC TTT AAC TTC TAT GAC TTC CCG AA	[SEQ ID NO: 42]

FIGURE 23



Satellite Probe



Detection Signal

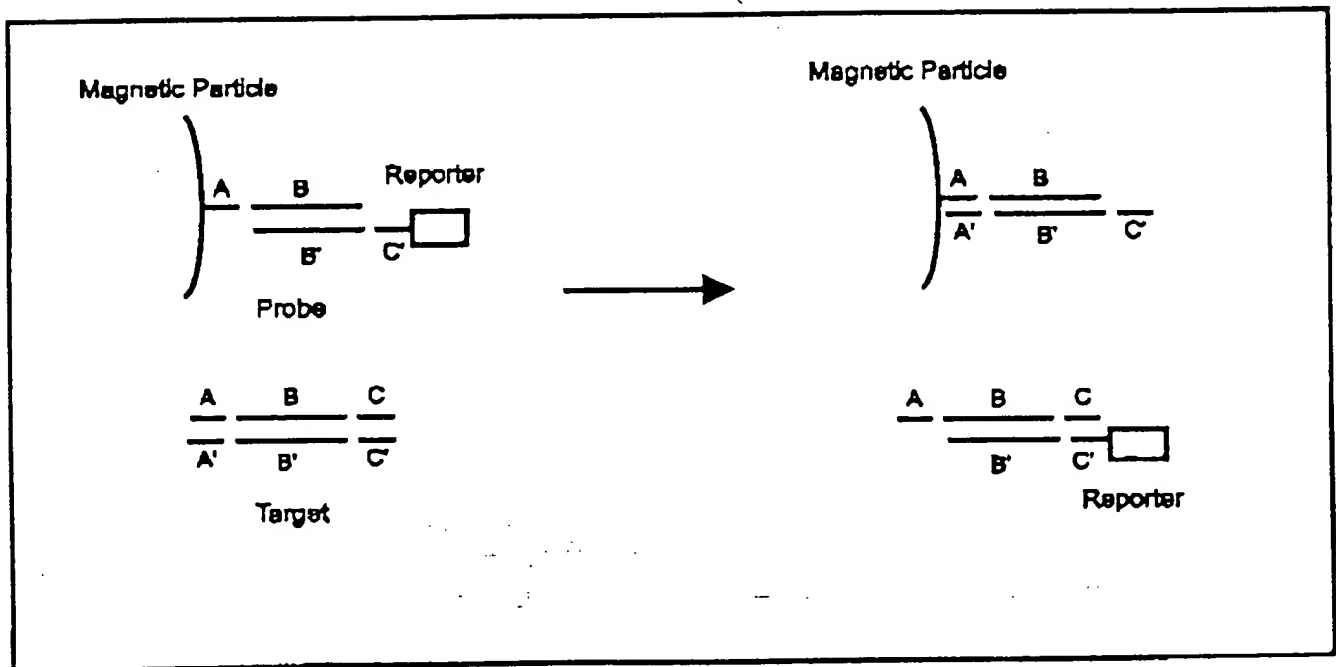


FIGURE 24